



11/28/00

Please check plus (+) inside this box -



PTO/SB/29 (12/97)

Approved for use through 09/30/00. OMB 0651-0032

Patent and Trademark Office: U.S. DEPARTMENT OF COMMERCE

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

UTILITY PATENT APPLICATION TRANSMITTAL <i>(Only for new nonprovisional applications under 37 CFR 1.53(b))</i>	Attorney Docket No.	7853-224	Total Pages	134
	First Named Inventor or Application Identifier			
	Hong Chen et al.			
	Express Mail Label No.	N/A		

U.S. PTO
09/22544

11/28/00

APPLICATION ELEMENTS See MPEP chapter 600 concerning utility patent application contents.	ADDRESS TO: Assistant Commissioner for Box Patent Application Washington, DC 20231
<p>1. <input checked="" type="checkbox"/> Fee Transmittal Form <i>Submit an original, and a duplicate for fee processing</i></p> <p>2. <input checked="" type="checkbox"/> Specification [Total Pages <u>96</u>] <i>(preferred arrangement set forth below)</i> -Descriptive title of the Invention -Cross Reference to Related Applications -Statement Regarding Fed sponsored R&D -Reference to Microfiche Appendix -Background of the Invention -Brief Summary of the Invention -Brief Description of the Drawings <i>(if filed)</i> -Detailed Description of the Invention (including drawings, <i>if filed</i>) -Claim(s) -Abstract of the Disclosure</p> <p><input checked="" type="checkbox"/> Drawing(s) (35 USC 113) [Total Sheets <u>24</u>]</p> <p><input checked="" type="checkbox"/> Oath or Declaration (unexecuted) [Total Sheets <u>2</u>]</p> <p>a. <input type="checkbox"/> Newly executed (original or copy)</p> <p>b. <input type="checkbox"/> Copy from a prior application (37 CFR 1.63(d)) <i>(for continuation/divisional with Box 17 completed)</i> [Note Box 5 below]</p> <p>i. <input type="checkbox"/> DELETION OF INVENTORS(S) Signed statement attached deleting inventor(s) named in the prior application, see 37 CFR 1.63(d)(2) and 1.33 (b).</p> <p><input type="checkbox"/> Incorporation By Reference <i>(useable if Box 4b is checked)</i> The entire disclosure of the prior application, from which a copy of the oath or declaration is supplied under Box 4b, is considered as being part of the disclosure of the accompanying application and is hereby incorporated by reference therein.</p>	<p>6. <input type="checkbox"/> Microfiche Computer Program <i>(Appendix)</i></p> <p>7. <input type="checkbox"/> Nucleotide and/or Amino Acid Sequence Submission <i>(if applicable, all necessary)</i></p> <p>a. <input type="checkbox"/> Computer Readable Copy</p> <p>b. <input type="checkbox"/> Paper Copy (identical to computer copy)</p> <p>c. <input type="checkbox"/> Statement verifying identity of above copies</p>

ACCOMPANYING APPLICATION PARTS

8. ☐ Assignment Papers (cover sheet & document(s))
9. ☐ 37 CFR 3.73(b) Statement ☒ Power of Attorney
(when there is an assignee)
10. ☐ English Translation Document *(if applicable)*
11. ☒ Information Disclosure Statement (IDS)/PTO-1449 ☒ Copies of IDS Citations
12. ☒ Preliminary Amendment
13. ☒ Return Receipt Postcard (MPEP 503)
(Should be specifically itemized)
14. ☐ Small Entity ☐ Statement filed in prior application, Statement(s) Status still proper and desired
15. ☐ Certified Copy of Priority Document(s)
(if foreign priority is claimed)
16. ☐ Other:

17. If a **CONTINUING APPLICATION**, check appropriate box and supply the requisite information:

- ☐ Continuation ☐ Divisional ☒ Continuation-in-part (CIP) of prior application No: 09/236,134 filed January 22, 1999.

18. CORRESPONDENCE ADDRESS

<input checked="" type="checkbox"/> Customer Number or Bar Code Label	20582 <i>(Insert Customer No. or Attach bar code label here)</i>	or <input type="checkbox"/> Correspondence address below
NAME		
ADDRESS		
CITY	STATE	ZIP CODE
COUNTRY	TELEPHONE	FAX

Burden Hour Statement: This form is estimated to take 0.2 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, Patent and Trademark Office, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Box Patent Application, Washington, DC 20231.

PENNIE & EDMONDS LLP
COUNSELLORS AT LAW
1667 K Street, N.W.
Washington, D.C. 20006
(202) 496-4400

ATTORNEY DOCKET NO. 7853-224-999

Date: November 28, 2000

Assistant Commissioner for Patents
Box PATENT APPLICATION
Washington, D.C. 20231

Sir:

The following utility patent application is enclosed for filing:

Applicant(s): Hong CHEN; Nelson B. FREIMER

Executed on: November 28, 2000

Title of Invention: METHODS OF DIAGNOSING NEUROPSYCHIATRIC DISORDERS

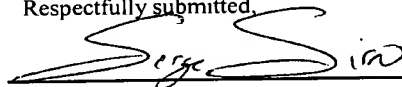
PATENT APPLICATION FEE VALUE

TYPE	NO. FILED	LESS	EXTRA	EXTRA RATE	FEE
Total Claims	14	-20	0	\$18.00 each	\$ 0.00
Independent	2	-3	0	\$80.00 each	\$ 0.00
Minimum Fee					\$ 710.00
Multiple Dependency Fee If Applicable (\$270.00)					\$ 0.00
Total					\$ 710.00
50% Reduction for Independent Inventor, Nonprofit Organization or Small Business Concern (a verified statement as to the applicant's status is attached)					\$ 0.00
Total Filing Fee					\$ 710.00

- ☐ Priority of filed in the U.S. and are claimed under 35 U.S.C. § 119.
- ☐ The certified copy of the priority application has been filed in application no. filed
- ☒ This is a continuation-in-part of application no. 09/236,134, filed January 22, 1999 which claims priority of U.S. Provisional application nos. 60/078,044; 60/088,312 and 60/106,056, filed on March 16, 1998; June 5, 1998 and October 28, 1998, respectively.

Please charge the required fee to Pennie & Edmonds LLP Deposit Account No. 16-1150. A copy of this sheet is enclosed.

Respectfully submitted,



Serge Sira

PENNIE & EDMONDS LLP
1667 K Street, N.W., Suite 1000
Washington, D.C. 20006
Phone: (202) 496-4400

39,445
(Reg. No.)

For: Laura A. Coruzzi, Reg. No. 30,742

PENNIE & EDMONDS LLP
1155 Avenue of the Americas
New York, New York 10036-2711
Phone: (212) 790-9090

Enclosure

5 METHODS OF DIAGNOSING NEUROPSYCHIATRIC DISORDERS

TABLE OF CONTENTS

Page

10	1. <u>INTRODUCTION</u>	- 1 -
	2. <u>BACKGROUND OF THE INVENTION</u>	- 1 -
	3. <u>SUMMARY OF THE INVENTION</u>	- 5 -
15	3.1. <u>DEFINITIONS</u>	- 11 -
	4. <u>BRIEF DESCRIPTION OF THE FIGURES</u>	- 12 -
	5. <u>DETAILED DESCRIPTION OF THE INVENTION</u>	- 13 -
20	5.1. <u>THE <i>HKNG1</i> GENE</u>	- 13 -
	5.2. <u>PROTEIN PRODUCTS OF THE <i>HKNG1</i> GENE</u>	- 19 -
	5.3. <u>ANTIBODIES TO <i>HKNG1</i> GENE PRODUCTS</u>	- 30 -
	5.4. <u>USES OF <i>HKNG1</i> GENE SEQUENCES GENE PRODUCTS, AND</u> <u>ANTIBODIES</u>	- 33 -
25	5.5. <u>DIAGNOSIS OF <i>HKNG1</i>-MEDIATED NEUROPSYCHIATRIC</u> <u>DISORDERS</u>	- 34 -
	5.6. <u>DETECTION OF <i>HKNG1</i> NUCLEIC ACID MOLECULES</u>	- 36 -
	5.7. <u>DETECTION OF <i>HKNG1</i> GENE PRODUCTS</u>	- 43 -
30	5.8. <u>SCREENING ASSAYS FOR COMPOUNDS THAT MODULATE <i>HKNG1</i></u> <u>GENE ACTIVITY</u>	- 49 -
	5.8.1. <u><i>IN VITRO</i> SCREENING ASSAYS FOR COMPOUNDS THAT</u> <u>BIND TO THE <i>HKNG1</i> GENE PRODUCT</u>	- 51 -

5.8.2.	<u>ASSAYS FOR INTRACELLULAR PROTEINS THAT INTERACT WITH <i>HKNG1</i> GENE PRODUCTS</u>	- 53 -
5.8.3.	<u>ASSAYS FOR COMPOUNDS THAT INTERFERE WITH <i>HKNG1</i> GENE PRODUCT MACROMOLECULE INTERACTION</u>	- 56 -
5.8.4.	<u>ASSAYS FOR IDENTIFICATION OF COMPOUNDS THAT AMELIORATE A <i>HKNG1</i>-MEDIATED NEUROPSYCHIATRIC DISORDERS</u>	- 61 -
5.9.	<u>COMPOUNDS AND METHODS FOR THE TREATMENT OF <i>HKNG1</i>-MEDIATED NEUROPSYCHIATRIC DISORDERS</u>	- 63 -
5.9.1.	<u>INHIBITORY ANTISENSE, RIBOZYME AND TRIPLE HELIX APPROACHES</u>	- 64 -
5.9.2.	<u>GENE REPLACEMENT THERAPY</u>	- 74 -
5.10.	<u>PHARMACEUTICAL PREPARATIONS AND METHODS OF ADMINISTRATION</u>	- 77 -
5.10.1.	<u>EFFECTIVE DOSE</u>	- 77 -
5.10.2.	<u>FORMULATIONS AND USE</u>	- 78 -
6.	<u>EXAMPLE: THE <i>HKNG1</i> GENE OF CHROMOSOME 18 IS ASSOCIATED WITH THE NEUROPSYCHIATRIC DISORDER BAD</u>	- 81 -
6.1.	<u>MATERIALS AND METHODS</u>	- 81 -
6.1.1.	<u>LINKAGE DISEQUILIBRIUM</u>	- 81 -
6.1.2.	<u>YEAST ARTIFICIAL CHROMOSOME (YAC) MAPPING</u>	- 81 -
6.1.3.	<u>BACTERIAL ARTIFICIAL CHROMOSOME (BAC) MAPPING</u>	- 81 -
6.1.4.	<u>RADIATION HYBRID (RH) MAPPING</u>	- 82 -
6.1.5.	<u>SAMPLE SEQUENCING: BASE-PAIR PERFECT SEQUENCING</u>	- 82 -
6.2.	<u>RESULTS</u>	- 83 -
7.	<u>EXAMPLE: SEQUENCE AND CHARACTERIZATION OF THE <i>HKNG1</i> GENE</u>	- 84 -
7.1.	<u>MATERIALS AND METHODS</u>	- 85 -

[illegible]